Plaquemines Barrier System- l884 to 1988

The Plaquemines barrier shoreline lies about 45 km northwest of the mouth of the Mississippi River and about 80 km south-southeast of New Orleans (fig. 1). The arcuate barrier system is approximately 48 km long, forms the eastern flank of Barataria Bight, and extends from Grand Terre Islands to Sandy Point (chapter 1, fig. 14). The Plaquemines barrier shoreline consists of the Grand Terre Islands (west, central, and east), Cheniere Ronquille, the Bay La Mer area, Bay Joe Wise spit, Bastian Island, Shell Island, Pelican Island, and Sandy Point. These islands and spits range from 0.02 to 0.9 km wide. Barataria Pass, Pass Abel, Quatre Bayoux Pass, Pass Ronquille, Pass La Mer, Chaland Pass, Grand Bayou Pass, Coupe Bob, Fontanelle Pass, Scofield Bayou, and Dry Cypress Bayou Pass are some of the numerous tidal inlets and bayous that segment the shoreline. In addition, an extensive network of pipeline canals fragment the shoreline's landscape. The Plaquemines shoreline has undergone severe coastal erosion and land loss, primarily from a lack of sediment supply, rapid subsidence, and storm and human impacts (Adams, 1970; Adams and others, 1976; Howard, 1982; Mossa and others, 1985; Penland and Suter, 1988; Levin, 1990; Ritchie and others, 1990). Maps presented depict changes along the shoreline during the years 1884, 1932, 1956, 1973, and 1988. From these maps, linear, area, and width measurements were obtained, and rates of change were calculated to determine the amount and rapidity of change that has occurred.

MORPHOLOGY

In 1884, Plaquemines' morphology was influenced by several tidal inlets and passes, such as Barataria Pass, Quatre Bayoux Pass, Pass La Mer, Chaland Pass, Grand Bayou Pass, and two unnamed passes at both ends of Lanaux Island (1884 map). Grand Terre Island was a large and continuous barrier island that extended from Barataria Pass to Quatre Bayoux Pass. The remainder of the shoreline was dominated by deltaic headlands associated with Robinson Bayou, Grand Bayou, and Dry Cypress Bayou and flanking barrier islands and spits. Lanaux Island was a long and narrow barrier island with bulbous ends, which suggests longshore sediment transport at both ends and an erosional center portion. By 1932, Grand Terre Island was breached, and Pass Ronquille opened east of Quatre Bayoux Pass (1932 map). Chaland Pass had widened substantially, and Lanaux Island was breached by an unnamed tidal inlet as its eastern end welded to the mainland shoreline. Moreover, an opening developed west of Sandy Point to form Sandy Point Island. By 1956, the Grand Terre area had deteriorated and separated into three smaller barriers (1956 map). Lanaux Island, currently known as Shell Island, welded onto the mainland shoreline and evolved into a long, narrow spit. Fontanelle Pass was dredged, and Scofield Bayou developed naturally, forming two new entrances along the shoreline.

By 1973, Grand Terre Island was reduced to less than half its original size with only fragmentary island remnants remaining between Pass Abel and Quatre Bayoux Pass (1973 map). This fragmentary nature of the shoreline had developed between Pass Abel and Chaland Pass. Jetties at Fontanelle Pass (known as Empire jetties) blocked longshore sediment transport to the west-northwest, and a downdrift offset occurred. Large volumes of sand deposited against the updrift jetty to the east caused seaward advance, while the area to the west experienced inadequate sediment supply and shoreline recession. The Plaquemines shoreline appears to be reaching a complete breakdown in the coastal system (1988 map). The Grand Terre Islands no longer form a protective barrier for Barataria Bay. Submergence, a decreasing sediment supply, and human impacts have caused large areas of back-barrier marsh to be converted to open water (Britsch and Kemp, 1990). In 1979, Hurricane Bob breached Shell Island (Coupe Bob), and the island further deteriorated (see Neumann and others, 1985).

SHORELINE MOVEMENT

Magnitude and rate of change, as well as island width for the Plaquemines coast, were derived from 149 shore-normal transects along the gulf and bay shorelines (transects map; tables 24, 25, 26, 27, and 28). Comparisons of shoreline position are made for the periods 1884 vs. 1932, 1932 vs. 1956, 1956 vs. 1973, 1973 vs. 1988, and 1884 vs. 1988. Proximity of the shore-normal transects to entrances (tidal inlets) is also provided.

The average rate of change between 1884 and 1932 along the gulf shoreline was -5.5 m/yr. This average rate decreased to -4.1 and -3.2 m/yr for the periods 1932 and 1956, and 1956 and 1973, respectively. However, the rate increased threefold to -9.9 m/yr between 1973 and 1988 (fig. 37, table 28). This period coincides with the occurrence of Hurricanes Bob (1979) and Juan (1985). The impacts of these hurricanes on the fragile Plaquemines shoreline probably contributed to the increased rate of retreat of the gulf shoreline over the last 15 years.

The bayside rate of change between 1884 and 1932 averaged 2.2 m/yr (table 26). From 1932 to 1956, the shoreline continued to migrate landward at a slower rate of 0.2 m/yr and reversed directions to increase to -2.3 m/yr between 1956 and 1973. Bayside movement reversed again to migrate landward at 3.7 m/yr between 1973 and 1988 (fig. 38). A sudden reverse of the bay shoreline landward suggests storm impacts (hurricanes or cold fronts). Elevated water levels associated with storms carry sediment across islands and deposit it as washover along the bay shoreline to result in shoreline progradation. Hurricanes Bob and Juan directly impacted the Plaquemines shoreline and produced washover deposits (Neumann and others, 1985; Case, 1986; Penland and others, 1987, 1989c; Ritchie and others, 1990).

The 1884 vs. 1988 map illustrates land loss and quantitative changes for the Plaquemines barrier system. The rate of gulfside change along individual. transects ranged from 1.9 to -15.6 m/yr (table 28). Three locations exhibited stable or accretionary trends: west Grand Terre Island, west Shell Island, and the land east of Fontanelle Pass. Grand Terre and Shell islands experienced accretion from spit processes, but the land east of Fontanelle Pass is on the updrift side of the Empire jetties, which capture sediment in the longshore transport system. The average gulfside rate of change was -5.5 m/yr (table 28), and the bayside rate of change ranged from 12.5 to -4.7 m/yr, with an average rate of 0.4 m/yr (table 26). The average width narrowed from 487 to 263 m between 1884 and 1988 (fig. 39, table 27) because the gulf shoreline migrated landward about five times faster than the bay shoreline (-5.5 m/yr vs. 0.4 m/yr, respectively). Barrier widths for 1884 and 1988 are shown in figure 40.

AREA AND WIDTH CHANGE

Coalescing deltaic headlands with numerous spits dominate the Plaquemines shoreline. Therefore Grand Terre and Shell islands are the only locations along the Plaquemines coast where true area calculations could be obtained.

Grand Terre

In 1884, the area of Grand Terre was 1,699 ha with an average width of 909 m (tables 27 and 29). By 1932, both area and width decreased to 1,058 ha and 701 m, respectively. The average rate of land loss between 1884 and 1932 was 13.4 ha/yr, a 38 percent decrease in island area. By 1956, the area of Grand Terre was 901 ha and the average width 670 m. As width decreases in response to gulf and bayside erosion. area decreases Between 1932 and 1956, the average rate of change decreased 15 percent to -6.5 ha/yr. By 1973, area had contracted further to 675 ha, while island width decreased to 608 m. Between 1956 and 1973, area decreased by 25 percent, or an average rate of 13.3 ha/yr. Between 1973 and 1988, the rate of land loss slowed slightly to -10.8 ha/yr (fig. 41).

Overall, the area of Grand Terre Island decreased 1,186 ha at a rate of 11.4 ha/yr between 1884 and 1988 (fig. 42, table 29). Island width decreased from 909 to 530 m, an average island narrowing rate of 3.6 m/yr (fig. 43).

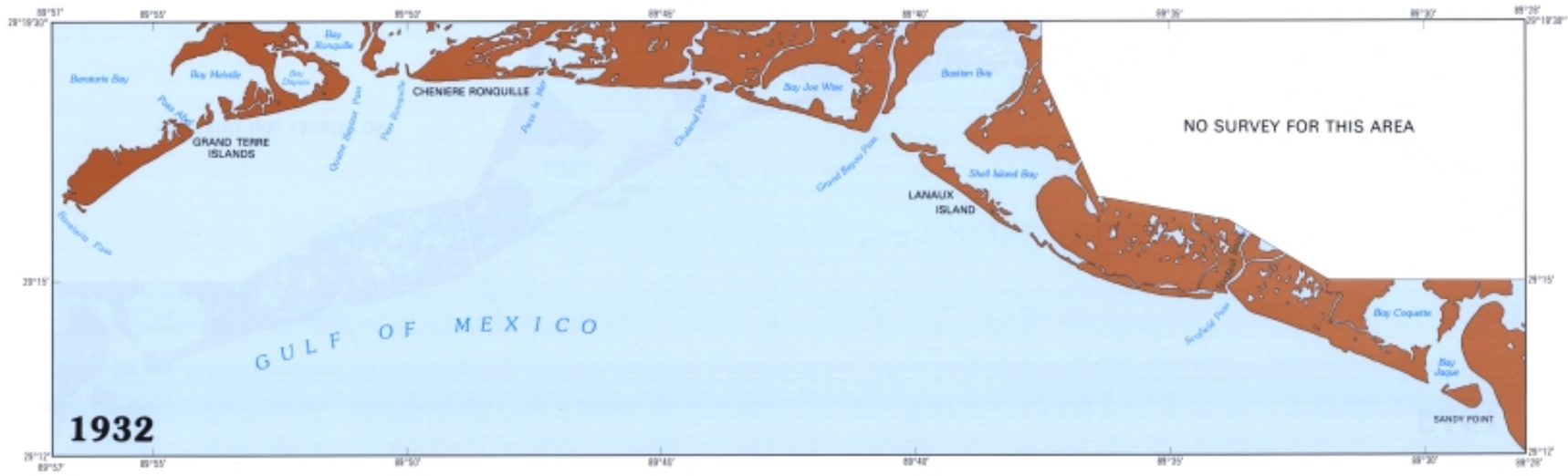
Shell Island

In 1884, the area of Shell Island was 127 ha with an average width of 136 m (tables 27 and 30). By 1932, area and width increased to 175 ha and 247 m as the island grew in size at a rate of 1.0 ha/yr (fig. 44). Between 1932 and 1956, the rate of change slowed to 0.1 ha/yr. Area remained relatively stable at 178 ha, while the width showed an increase to 269 m. By 1973, the size of the island decreased to 144 ha at a rate of 2.0 ha/yr. Similarly, island width narrowed to 207 m. The land loss rate further increased to -5.0 ha/yr between 1973 and 1988 as both area and width experienced nearly a 50 percent decrease to 69 ha and 105 m. respecively.

Shell Island decreased 46 percent between 1884 and 1988 (fig. 45, table 30). Its width decreased 55 m to represent an average narrowing rate of 0.5 m/yr for the last 104 years (fig. 46).

• Historic Shorelines.

Plaquemines



SCALE 1:100 000

1 0 1 2 3 4 5 MILES
1 0 1 2 3 4 5 KILOMETERS

Plaquemines

Plaquemines

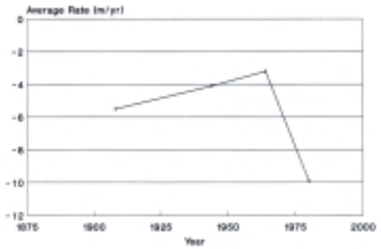


FIGURE 37.—Average gulfside rate of change along the Plaquemines shoreline between 1884 and 1988.

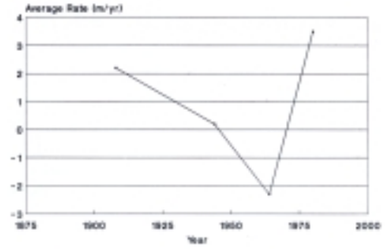


FIGURE 38.—Average bayside rate of change along the Plaquemines shoreline between 1884 and 1988

FIGURE 39.—Average barrier width of the Plaquemines shoreline between 1884 and 1988.

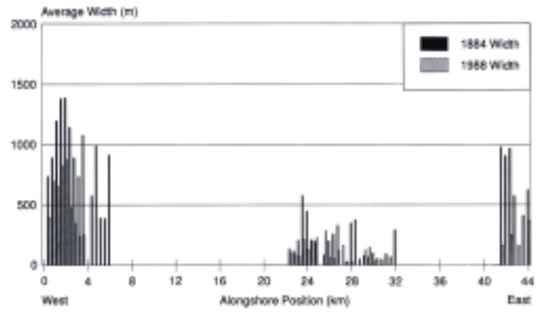


FIGURE 40.—Comparison of the 1884 and 1988 barrier widths along the Plaquemines shoreline.

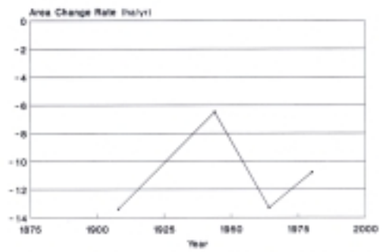


FIGURE 41.—Rate of area change for the Grand Terre Islands between 1884 and 1988.

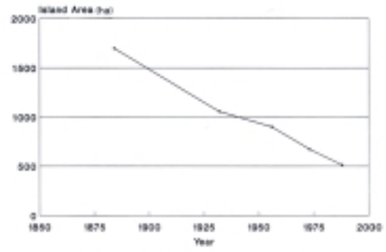
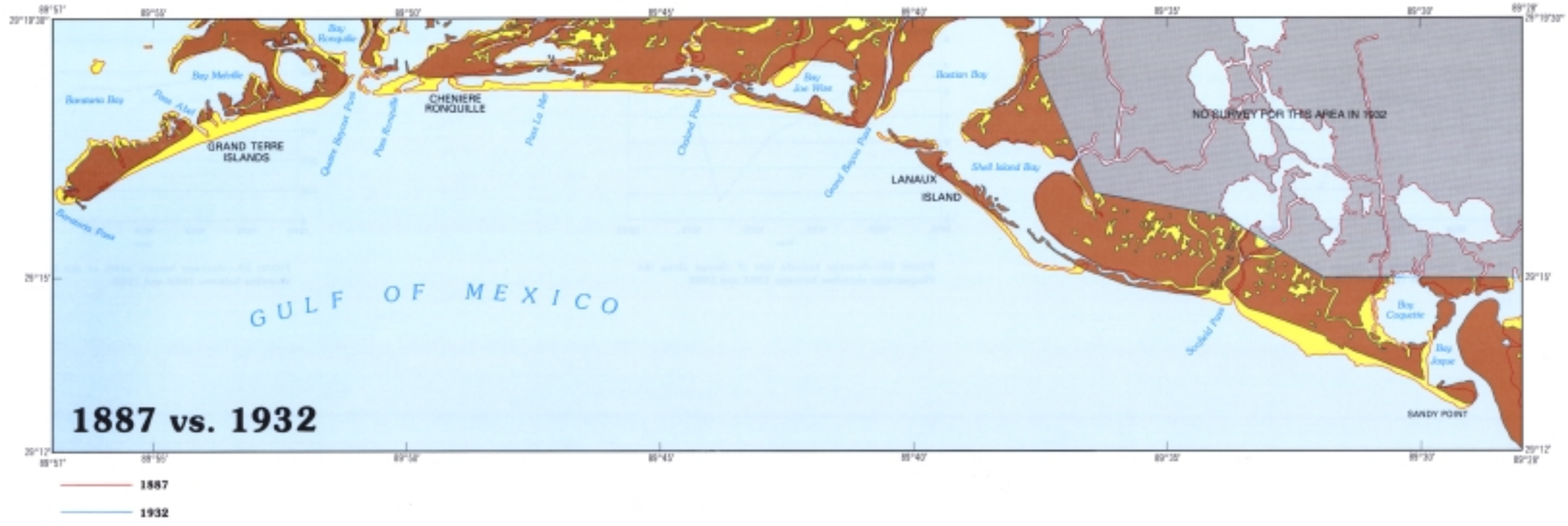
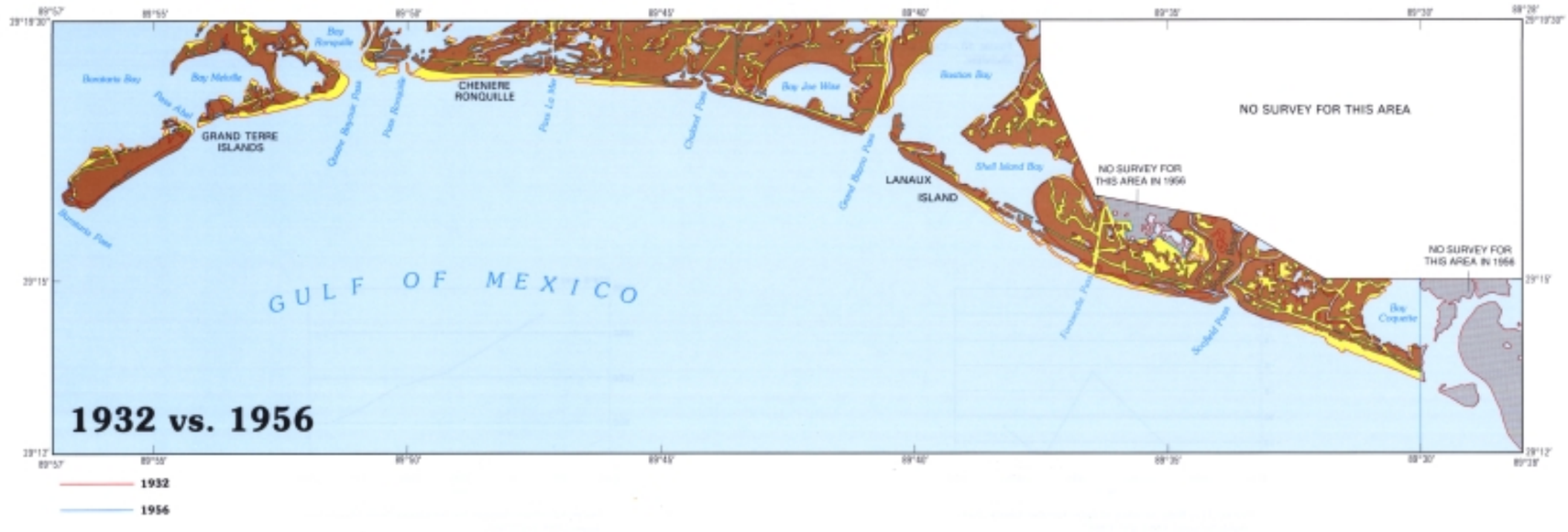


FIGURE 42.—Area changes for the Grand Terre Islands between 1884 and 1988.

Plaquemines

• Shoreline Change and Land Loss •





Plaquemines

Plaquemines

Plaquemines

TABLE 24 —*Plaquemines bayside magnitude of change (meters)*

Transect #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Transect coordinate	89° 56' 45"	30"	15"	89° 56' 00"	45"	30"	15"	89° 55' 00"	45"	30"	15"	89° 54' 00"	45"	30"	15"	89° 53' 00"	45"	30"	15"	89° 52' 00"	45"	30"	15"	89° 51' 00"	45"	30"	15"	89° 50' 00"	45"	30"	15"	89° 49' 00"	45"	30"	15"	89° 48' 00"	45"	30"	15"	89° 47' 00"	45"	30"	15"	89° 46' 00"	45"	30"	15"	89° 45' 00"	45"
Y 1884 – 1932	−77	−216	−140	−171	−213	−34	−62	−131	−33	−17	n.a.	−62	n.a.	600	0	−58	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
e 1932 – 1956	−16	−64	−74	−37	−26	−59	−75	−45	−66	−45	n.a.	−22	n.a.	−42	−84	−115	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
a 1956 – 1973	120	−76	−42	−61	−124	−67	−75	−37	−26	−46	n.a.	n.a.	n.a.	50	n.a.	38	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
r 1973 – 1988	70	−31	−63	−76	−113	−102	−72	−64	−46	230	n.a.	n.a.	n.a.	n.a.	n.a.	33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
s 1884 – 1988	133	−376	−329	−347	−476	−262	−284	−277	−174	142	n.a.	n.a.	n.a.	n.a.	n.a.	−101	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Transect #	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
Transect coordinate	30"	15"	89° 44' 00"	45"	30"	15"	89° 43' 00"	45"	30"	15"	89° 42' 00"	45"	30"	15"	89° 41' 00"	45"	30"	15"	89° 40' 00"	45"	30"	15"	89° 39' 00"	45"	30"	15"	89° 38' 00"	45"	30"	15"	89° 37' 00"	45"	30"	15"	89° 36' 00"	45"	30"	15"	89° 35' 00"	45"	30"	15"	89° 34' 00"	45"	30"	15"	89° 33' 00"	45"	30"
Y 1884 – 1932	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	237	219	83	69	−186	139	96	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	294	−68	25	533	429	229	n.a.	618	882	433	348	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
e 1932 – 1956	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−14	−27	25	3	2	−27	12	n.a.	n.a.	n.a.	n.a.	26	−12	21	38	4	16	−88	554	n.a.	402	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
a 1956 – 1973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−16	6	−10	−31	−12	−8	−33	n.a.	n.a.	n.a.	−49	−42	−65	−49	−41	−27	−42	16	−68	−38	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
r 1973 – 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4	−17	−39	−207	−67	−48	−63	n.a.	n.a.	n.a.	20	−2	−11	−17	897	n.a.	n.a.	707	481	172	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
s 1884 – 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	232	184	69	−256	−232	66	−6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	252	909	n.a.	589	1145	1297	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Transect #	99	100	101	102	103	104	105	106	107	108	109	110	111	112
Transect coordinate	15"	89° 32' 00"	45"	30"	15"	89° 31' 00"	45"	30"	15"	89° 30' 00"	45"	30"	15"	89° 29' 00"
Y 1884 – 1932	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−219	−115	96	−248	n.a.	112	287	n.a.
e 1932 – 1956	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	73	38	−128	n.d.	n.d.	n.d.	n.d.	n.d.
a 1956 – 1973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−145	−130	−106	n.d.	n.d.	n.d.	n.d.	n.d.
r 1973 – 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−27	n.a.	−189	n.a.	n.a.	n.a.	−18	n.a.
s 1884 – 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−318	n.a.	−319	n.a.	n.a.	n.a.	n.a.	n.a.

Grand Terre Islands bayside summary

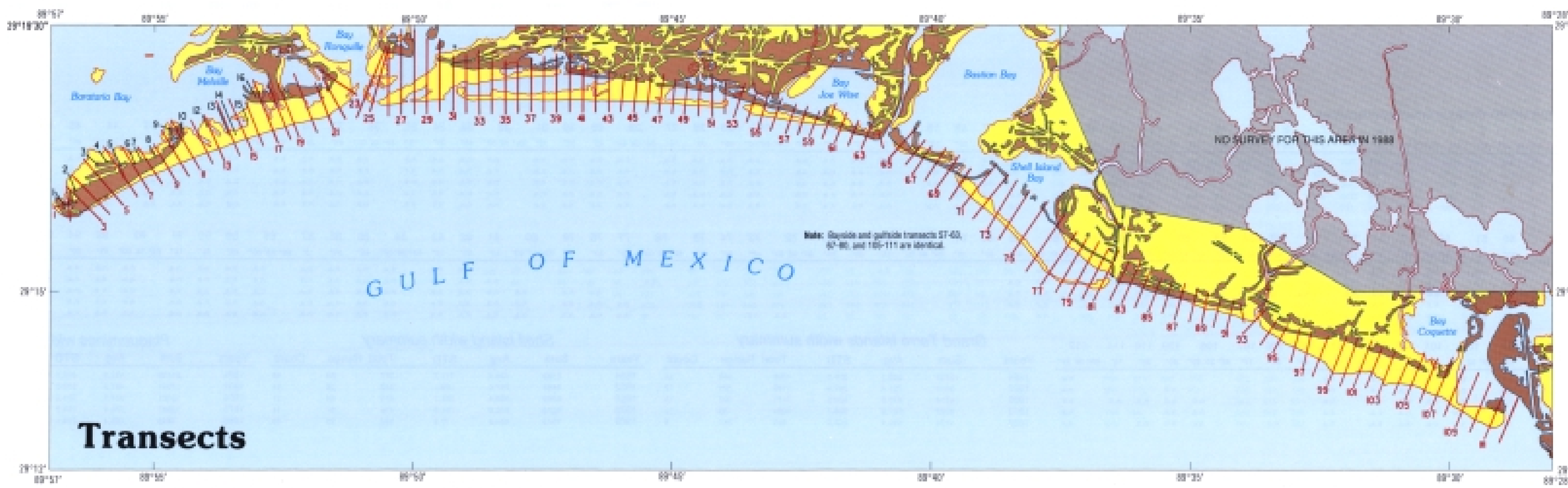
Years	Sum	Avg	STD	Total Range		Count
1884 – 1932	−288	−20.6	271.3	906	−218	14
1932 – 1956	−796	−56.9	26.4	−16	−115	14
1956 – 1973	−425	−35.4	60.1	120	−124	12
1973 – 1988	−201	−18.3	182.4	259	−113	11
1884 – 1988	−2427	−220.6	168.3	148	−476	11

Shell Island bayside summary

Years	Sum	Avg	STD	Total Range		Count
1884 – 1932	8526	852.6	232.7	882	−65	10
1932 – 1956	601	75.1	147.7	584	−56	8
1956 – 1973	−380	−38.0	136.6	16	−65	10
1973 – 1988	2471	308.9	213.1	891	−17	8
1884 – 1988	4110	822.0	310.3	1297	252	5

Plaquemines bayside summary

Years	Sum	Avg	STD	Total Range		Count
1884 – 1932	5620	152.2	278.0	906	−263	37
1932 – 1956	172	5.2	131.3	584	−128	33
1956 – 1973	−1277	−39.9	58.3	120	−145	32
1973 – 1988	1603	61.6	247.1	991	−297	29
1884 – 1988	1077	43.1	466.4	1297	−476	25



Gulfside Transects — Bayside Transects

TABLE 25 —*Plaquemines gulfside magnitude of change (meters)*

Transect #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Transect coordinate	89° 56' 45"	30"	15"	89° 56' 00"	45"	30"	15"	89° 55' 00"	45"	30"	15"	89° 54' 00"	45"	30"	15"	89° 53' 00"	45"	30"	15"	89° 52' 00"	45"	30"	15"	89° 51' 00"	45"	30"	15"	89° 50' 00"	45"	30"	15"	89° 49' 00"	45"	30"	15"	89° 48' 00"	45"	30"	15"	89° 47' 00"	45"	30"	15"	89° 46' 00"	45"	30"	15"	89° 45' 00"	45"
Y 1884 – 1932	−356	−213	135	51	−46	−109	−150	−181	−260	−304	−354	n.a.	−630	n.a.	−474	−398	−367	−314	−250	−252	−330	−98	−28	−907	−917	−712	−747	−622	−529	−442	−48	−388	−469	−468	−514	−616	−848	−623	−612	−872	−824	−380	−319	−392	−268	−263	−307	−296	−364
e 1932 – 1956	65	169	174	133	66	119	134	117	110	168	129	n.a.	−79	n.a.	−163	−213	−135	−214	−202	−267	n.a.	−292	−277	−208	−238	−485	−312	−213	−496	−366	−276	−234	−177	−198	−129	−104	−134	−133	166	−148	−87	−230	−171	−184	−119	−138	−64	−44	−43
a 1956 – 1973	67	−7	−168	−62	−12	23	14	31	10	−62	−274	n.a.	n.a.	−287	−439	n.a.	−218	−432	−155	n.a.	n.a.	−132	−139	−98	−126	−118	−115	−114	n.a.	−120	−127	−105	−77	−93	−134	−581	−136	−187	−58	−195	−125	−27	−136	−113	−111	−73	−61	−81	−66
r 1973 – 1988	41	75	−128	−153	−111	−134	−118	−140	−141	−169	−207	n.a.	n.a.	n.a.	n.a.	n.a.	−231	49	−218	n.a.	−128	n.a.	−221	−607	−232	−310	−315	−177	n.a.	n.a.	−262	−226	−251	−234	−181	221	−185	−92	−223	−24	−129	−80	−79	−103	−147	−133	−79	−61	−102
s 1884 – 1988	−173	20	12	−56	−75	−98	−120	−180	−294	−407	−679	n.a.	n.a.	n.a.	n.a.	n.a.	−954	−932	−655	−793	−817	n.a.	−992	−1820	−1807	−1602	−1480	−1427	n.a.	n.a.	−703	−881	−996	−991	−958	−1209	−1308	−1035	−868	−638	−874	−727	−702	−659	−665	−625	−551	−504	−504

Transect #	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
Transect coordinate	30"	15"	89° 44' 00"	45"	30"	15"	89° 43' 00"	45"	30"	15"	89° 42' 00"	45"	30"	15"	89° 41' 00"	45"	30"	15"	89° 40' 00"	45"	30"	15"	89° 39' 00"	45"	30"	15"	89° 38' 00"	45"	30"	15"	89° 37' 00"	45"	30"	15"	89° 36' 00"	45"	30"	15"	89° 35' 00"	45"	30"	15"	89° 34' 00"	45"	30"	15"	89° 33' 00"	45"	30"
Y 1884 – 1932	−344	−354	n.a.	n.a.	−262	−273	−240	−200	−171	−152	−72	−81	−90	−7	121	n.a.	−82	26	118	n.a.	114	−30	−73	−32	−46	−184	n.a.	−637	−660	−608	−381	−234	281	275	371	342	282	269	168	63	−18	−109	−471	−165	−308	−253	−484	−539	−594
e 1932 – 1956	−14	−20	n.a.	118	93	15	16	11	29	37	38	60	52	86	66	n.a.	−60	124	233	21	−86	−85	−141	−217	−258	−317	n.a.	−276	−261	−286	−302	−243	−242	−161	−153	−168	−141	−132	−64	−7	50	122	387	−94	−29	−8	−15	−60	−131
a 1956 – 1973	−24	−64	−290	−73	−14	−7	−14	−19	−10	−17	−12	−17	−28	4	−5	−30	192	27	−7	−35	−57	−71	−58	−52	−83	−27	−53	−44	−42	−97	−87	−142	192	7	55	6	−6	4	−23	6	14	17	10	127	47	105	76	88	−7
r 1973 – 1988	−97	−12	153	−61	−60	−62	−81	−64	−64	−93	−49	−52	−32	−38	−62	n.a.	−64	−166	−209	−232	−257	−1051	n.a.	n.a.	−731	−891	−433	−301	−229	−192	−274	−275	−87	−115	−98	−92	−73	−115	−85	−145	−150	−144	−162	3	47	24	−6	6	57
s 1884 – 1988	−479	−451	n.a.	n.a.	−243	−248	−319	−272	−215	−195	−95	−90	−88	45	116	n.a.	n.a.	n.a.	n.a.	n.a.	−260	−1227	n.a.	n.a.	−1068	−1229	−1229	−1300	−1241	−1065	−864	−891	84	19	127	138	62	22	−14	−89	−98	−112	−287	−112	−240	−233	−407	−831	−875

Transect #	99	100	101	102	103	104	105	106	107	108	109	110	111	112
Transect coordinate	15"	89° 32' 00"	45"	30"	15"	89° 31' 00"	45"	30"	15"	89° 30' 00"	45"	30"	15"	89° 29' 00"
Y 1884 – 1932	−765	−867	−343	−288	−306	−269	−187	−181	−158	−171	n.a.	−250	−216	n.a.
e 1932 – 1956	−255	−208	−308	−332	−325	−297	−277	−240	−238	n.d.	n.d.	n.d.	n.d.	n.d.
a 1956 – 1973	98	71	27	68	119	1	44	47	33	n.d.	n.d.	n.d.	n.d.	n.d.
r 1973 – 1988	−141	−64	−147	−147	−171	n.a.	−159	n.a.	−228	n.a.	n.a.	n.a.	−165	n.a.
s 1884 – 1988	−1064	−918	−769	−682	−733	n.a.	−560	n.a.	−587	n.a.	n.a.	n.a.	−526	n.a.

Grand Terre Islands gulfside summary

Years	Sum	Avg	STD	Total Range		Count
1884 – 1932	−4817	−229.4	187.0	315	−830	21
1932 – 1956	−498	−24.9	169.1	174	−292	20
1956 – 1973	−2188	−121.6	153.6	92	−459	18
1973 – 1988	−1905	−119.1	98.9	58	−234	16
1884 – 1988	−6831	−401.8	365.1	193	−954	17

Shell Island gulfside summary

Years	Sum	Avg	STD	Total Range		Count
1884 – 1932	−2580	−184.3	288.3	118	−660	14
1932 – 1956	−2142	−142.8	181.7	233	−317	15
1956 – 1973	−698	−41.1	67.7	188	−142	17
1973 – 1988	−5064	−360.1	264.4	−54	−1051	14
1884 – 1988	−10554	−1055.4	291.6	−256	−1300	10

Plaquemines gulfside summary

Years	Sum	Avg	STD	Total Range		Count
1884 – 1932	−27606	−265.4	279.7	371	−933	104
1932 – 1956	−8847	−87.7	173.1	516	−496	101
1956 – 1973	−6426	−63.6	115.9	192	−581	101
1973 – 1988	−13668	−145.6	166.5	224	−1051	94
1884 – 1988	−81411	−871.2	464.5	193	−1629	90

See page 46 for explanation of numbers.

Plaquemines

TABLE 26.—*Plaquemines bayside rate of change (meters per year)*

Transect #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Transect coordinate		89° 56' 45"	30"	15"	89° 56' 00"	45"	30"	15"	89° 55' 00"	45"	30"	15"	89° 54' 00"	45"	30"	15"	89° 53' 00"	45"	30"	15"	89° 52' 00"	45"	30"	15"	89° 51' 00"	45"	30"	15"	89° 50' 00"	45"	30"	15"	89° 49' 00"	45"	30"	15"	89° 48' 00"	45"	30"	15"	89° 47' 00"	45"	30"	15"	89° 46' 00"	45"	30"	15"	89° 45' 00"	45"
Y	1884 - 1932	−1.6	−4.5	−2.9	−3.6	−4.4	−8.7	−1.7	−2.7	−8.7	−6.4	n.a.	−8.9	n.a.	19.0	0	−1.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ø	1932 - 1956	−0.7	−2.3	−3.1	−1.6	−1.1	−2.6	−3.1	−1.9	−2.6	−1.9	n.a.	−2.2	n.a.	−1.9	−3.8	−4.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
a	1956 - 1973	7.1	−4.6	−3.1	−3.6	−7.3	−8.7	−4.4	−2.2	−1.6	−2.8	n.a.	n.a.	n.a.	2.9	n.a.	2.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
r	1973 - 1988	5.1	−2.1	−4.2	−5.2	−7.5	−6.6	−4.6	−4.0	−3.0	17.2	n.a.	n.a.	n.a.	n.a.	n.a.	2.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
δ	1884 - 1988	1.0	−3.7	−3.3	−3.4	−4.7	−2.9	−3.0	−2.7	−1.7	1.6	n.a.	n.a.	n.a.	n.a.	n.a.	−1.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Transect #		50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
Transect coordinate		30"	15"	89° 44' 00"	45"	30"	15"	89° 43' 00"	45"	30"	15"	89° 42' 00"	45"	30"	15"	89° 41' 00"	45"	30"	15"	89° 40' 00"	45"	30"	15"	89° 39' 00"	45"	30"	15"	89° 38' 00"	45"	30"	15"	89° 37' 00"	45"	30"	15"	89° 36' 00"	45"	30"	15"	89° 35' 00"	45"	30"	15"	89° 34' 00"	45"	30"	15"	89° 33' 00"	45"	30"
Y	1884 - 1932	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.4	4.8	1.7	1.2	−3.4	2.8	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.1	−1.7	0.8	11.1	8.8	4.8	n.a.	12.8	14.2	9.4	7.2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ø	1932 - 1956	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−0.8	−1.1	1.0	0.1	0.1	−1.1	0.0	n.a.	n.a.	n.a.	n.a.	1.0	−0.8	0.8	1.6	0.2	0.8	−2.3	23.0	n.a.	17.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
a	1956 - 1973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−0.8	0.5	−0.8	−1.8	−0.7	−0.3	−1.9	n.a.	n.a.	n.a.	−2.9	−2.5	−0.8	−2.7	−2.4	−1.6	−2.5	0.9	−2.7	−2.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
r	1973 - 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.3	−1.1	−2.6	−19.8	−0.8	−3.2	−5.5	n.a.	n.a.	n.a.	2.0	−0.1	−0.7	−1.1	66.1	n.a.	n.a.	10.0	26.7	11.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
δ	1884 - 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.2	1.6	0.6	−2.8	−2.2	0.6	−0.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.4	8.7	n.a.	5.8	11.0	12.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Transect #		99	100	101	102	103	104	105	106	107	108	109	110	111	112
Transect coordinate		15"	89° 32' 00"	45"	30"	15"	89° 31' 00"	45"	30"	15"	89° 30' 00"	45"	30"	15"	89° 29' 00"
Y	1884 - 1932	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−6.6	−2.4	2.0	−8.8	n.a.	2.3	8.2	n.a.
ø	1932 - 1956	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.0	1.0	−5.2	n.d.	n.d.	n.d.	n.d.	n.d.
a	1956 - 1973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−8.5	−7.6	−5.9	n.d.	n.d.	n.d.	n.d.	n.d.
r	1973 - 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−1.3	n.a.	−12.6	n.a.	n.a.	n.a.	−1.0	n.a.
δ	1884 - 1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	−3.1	n.a.	−3.0	n.a.	n.a.	n.a.	n.a.	n.a.

Grand Terre Islands bayside summary

Years	Sum	Avg	STD	Total	Range	Count
1884 - 1932	−6.0	−0.4	5.7	19.3	−4.5	14
1932 - 1956	−33.2	−2.4	1.6	−0.7	−4.4	14
1956 - 1973	−26.0	−2.1	3.7	7.1	−7.3	12
1973 - 1988	−13.4	−1.2	8.8	17.2	−7.3	11
1884 - 1988	−24.0	−2.2	1.9	1.5	−4.7	11

Shell Island bayside summary

Years	Sum	Avg	STD	Total	Range	Count
1884 - 1932	73.6	7.4	4.6	14.2	−1.7	10
1932 - 1956	26.8	3.1	3.8	23.0	−3.3	8
1956 - 1973	−22.4	−2.2	4.3	0.9	−3.8	10
1973 - 1988	164.7	28.0	12.4	66.1	−1.1	6
1884 - 1988	39.5	7.9	12.9	12.5	2.4	5

Plaquemines bayside summary

Years	Sum	Avg	STD	Total	Range	Count
1884 - 1932	79.6	2.2	5.6	19.3	−5.9	37
1932 - 1956	7.2	0.2	6.6	23.0	−6.5	33
1956 - 1973	−75.1	−2.3	3.0	7.1	−8.5	32
1973 - 1988	100.2	3.5	17.8	66.1	−19.8	29
1884 - 1988	8.7	0.4	4.5	12.5	−4.7	25

TABLE 27.—*Plaquemines width measurements (meters)*

Transect #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Transect coordinate		89° 56' 45"	30"	15"	89° 56' 00"	45"	30"	15"	89° 55' 00"	45"	30"	15"	89° 54' 00"	45"	30"	15"	89° 53' 00"	45"	30"	15"	89° 52' 00"	45"	30"	15"	89° 51' 00"	45"	30"	15"	89° 50' 00"	45"	30"	15"	89° 49' 00"	45"	30"	15"	89° 48' 00"	45"	30"	15"	89° 47' 00"	45"	30"	15"	89° 46' 00"	45"	30"	15"	89° 45' 00"	45"
Y	1884	n.a.	740	899	1190	1383	1390	1145	881	738	1080	n.a.	679	993	383	389	618	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ø	1932	n.a.	329	864	1058	1168	1159	782	487	371	886	n.a.	n.a.	321	n.a.	678	494	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
a	1956	n.a.	243	808	1081	1171	1146	870	386	404	817	n.a.	n.a.	299	391	478	195	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
r	1973	n.a.	242	690	934	1094	1012	853	555	424	461	n.a.	n.a.	n.a.	319	83	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
δ	1988	n.a.	267	700	666	624	580	470	346	241	251	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Transect #		50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
Transect coordinate		30"	15"	89° 44' 00"	45"	30"	15"	89° 43' 00"	45"	30"	15"	89° 42' 00"	45"	30"	15"	89° 41' 00"	45"	30"	15"	89° 40' 00"	45"	30"	15"	89° 39' 00"	45"	30"	15"	89° 38' 00"	45"	30"	15"	89° 37' 00"	45"	30"	15"	89° 36' 00"	45"	30"	15"	89° 35' 00"	45"	30"	15"	89° 34' 00"	45"	30"	15"	89° 33' 00"	45"	30"
Y	1884	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	136	119	239	377	449	213	190	n.a.	99	200	229	221	n.a.	34	381	377	82	79	89	302	55	49	60	70	282	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ø	1932	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	193	187	139	555	202	251	295	n.a.	n.a.	118	257	251	309	442	331	331	550	482	108	n.a.	38	38	38	66	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
a	1956	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	192	188	201	406	264	314	388	n.a.	n.a.	34	199	175	518	402	204	195	555	157	348	384	108	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
r	1973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	180	179	138	385	234	248	281	n.a.	n.a.	171	778	148	419	297	91	113	251	101	275	296	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
δ	1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	99	87	72	214	125	204	239	n.a.	294	84	83	120	168	23	29	n.a.	n.a.	123	147	38	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Transect #		99	100	101	102	103	104	105	106	107	108	109	110	111	112
Transect coordinate		15"	89° 32' 00"	45"	30"	15"	89° 31' 00"	45"	30"	15"	89° 30' 00"	45"	30"	15"	89° 29' 00"
Y	1884	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	860	906	966	675	116	412	626	n.a.
ø	1932	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	667	648	868	124	n.a.	274	704	n.a.
a	1956	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	430	418	738	n.d.	n.d.	n.d.	n.d.	n.d.
r	1973	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	303	359	663	n.a.	n.a.	89	387	n.a.
δ	1988	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	166	n.a.	251	n.a.	n.a.	n.a.	272	n.a.

Grand Terre Islands width summary

Years	Sum	Avg	STD	Total	Range	Count
1884	12727	909.1	309.0	1390	389	14
1932	9417	791.4	297.9	1156	321	12
1956	8710	670.0	320.6	1171	186	13
1973	6687	607.9	306.7	1094	83	11
1988	4774	530.4	228.3	880	241	9

Shell Island width summary

Years	Sum	Avg	STD	Total	Range	Count
1884	2163	136.4	111.7	377	34	16
1932	3458	247.0	179.1	882	38	14
1956	2983	268.6	132.7	810	24	11
1973	2276	206.9	161.2	410	91	11
1988	1046	104.5	77.9	284	23	10

Plaquemines width summary

Years	Sum	Avg	STD	Total	Range	Count
1884	21428	487.0	407.1	1390	34	44
1932	17053	437.3	316.5	1166	38	39
1956	15551	444.3	291.2	1171	34	35
1973	12867	378.4	269.2	1094	80	34
1988	7638	263.4	232.4	880	23	29

TABLE 28.—*Plaquemines gulfside rate of change (meters per year)*

Transect #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Transect coordinate		89° 56' 45"	30"	15"	89° 56' 00"	45"	30"	15"	89° 55' 00"	45"	30"	15"	89° 54' 00"	45"	30"	15"	89° 53' 00"	45"	30"	15"	89° 52' 00"	45"	30"	15"	89° 51' 00"	45"	30"	15"	89° 50' 00"	45"	30"	15"	89° 49' 00"	45"	30"	15"	89° 48' 00"	45"	30"	15"	89° 47' 00"	45"	30"	15"	89° 46' 00"	45"	30"	15"	89° 45' 00"	45"
Y	1884 - 1932	−7.4	−4.4	2.8	1.1	−1.8	−2.2	−3.5	−4.6	−5.5	−8.5	−7.4	n.a.	−10.7	n.a.	−9.8	−8.1	−7.8	−6.5	−5.6	−8.9	−6.9	−1.8	−0.8	−18.8	−18.1	−14.8	−18.8	−19.4	−30.8	−8.2	−1.3	−8.1	−16.2	−16.2	−16.7	−13.5	−11.4	−13.0	−16.9	−11.9	−10.9	−7.5	−6.9	−8.1	−6.0	−5.9	−6.4	−8.2	−8.2
ø	1932 - 1956	2.2	7.0	7.2	4.5	4.6	5.0	5.6	4.9	4.6	8.2	4.4	n.a.	−2.3	n.a.	−9.8	−6.9	−0.8	−0.8	−8.4	−10.7	n.a.	−12.2	−11.2	−8.7	−8.8	−18.4	−13.0	−8.9	−20.9	−10.1	−11.5	−6.9	−7.4	−6.9	−5.4	−8.4	−5.6	−4.5	4.4	−8.2	−4.3	−10.4	−7.1	−7.7	−5.0	−6.7	−3.5	−1.5	−1.9
a	1956 - 1973	4.4	−8.1	−8.8	−3.6	−0.7	1.4	3.6	2.0	3.6	−4.8	−12.8	n.a.	n.a.	−18.9	−27.5	n.a.	−12.5	−20.8	−9.1	n.a.	n.a.	−8.9	−8.2	−5.8	−7.1	−5.6	−5.8	−6.7	n.a.	−7.1	−7.5	−6.1	−4.8	−6.8	−7.8	−33.0	−8.1	−11.0	−3.4	−11.9	−7.5	−1.6	−0.3	−6.6	−6.5	−4.3	−4.8	−4.8	−3.2
r	1973 - 1988	2.9	8.0	−8.5	−10.2	−7.4	−4.8	−7.9	−9.3	−8.4	−11.5	−13.8	n.a.	n.a.	n.a.	n.a.	n.a.	−15.8	5.9	−14.5	n.a.	−9.2	n.a.	−14.7	−27.1	−22.1	−20.7	−21.0	−11.8	n.a.	n.a.	−16.8	−10.1	−16.7	−13.8	−12.1	14.9	−12.2	−8.1	−14.9	−1.9	−6.5	−6.0	−3.1	−6.7	−8.8	−6.9	−3.3	−3.5	−6.8
δ	1884 - 1988	−1.7	0.2	0.1	−0.5	−0.7	−0.9	−1.5	−1.7	−2.7	−3.9	−8.4	n.a.	n.a.	n.a.	n.a.	n.a.	−8.2	−8.8	−8.2	−7.8	−7.8	n.a.	−8.4	−13.8	−13.2	−13.4	−14.2	−12.8	n.a.	n.a.	−6.8	−6.1	−6.5	−6.4	−9.2	−9.7	−8.7	−8.7	−6.5	−9.0	−8.4	−7.0	−6.5	−6.6	−6.4	−6.0	−5.3	−4.8	−4.8

Transect #		50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
Transect coordinate		30"	15"	89° 44' 00"	45"	30"	15"	89° 43' 00"	45"	30"	15"	89° 42' 00"	45"	30"	15"	89° 41' 00"	45"	30"	15"	89° 40' 00"	45"	30"	15"	89° 39' 00"	45"	30"	15"	89° 38' 00"	45"	30"	15"	89° 37' 00"	45"	30"	15"	89° 36' 00"	45"	30"	15"	89° 35' 00"	45"	30"	15"	89° 34' 00"	45"	30"	15"	89° 33' 00"	45"	30"
Y	1884 - 1932	−7.2	−7.4	n.a.	[illegible]	−7.1	−5.7	−5.6	−4.2	−3.8	−3.2	−1.6	−1.7	−1.9	−8.1	2.5	n.a.	−1.7	0.5	2.5	n.a.	2.4	−8.4	−1.5	−8.7	−1.0	−4.0	n.a.	−15.3	−16.2	−10.8	−7.8	−6.8	5.4	5.0	7.7	7.1	5.9	5.5	3.3	1.3	−0.2	−2.3	−8.8	−3.4	−6.4	−7.4	−9.7	−11.2	−12.4
ø	1932 - 1956	−6.6	−0.8	n.a.	21.6	3.0	3.6	0.7	0.5	1.2	1.6	1.6	2.6	3.4	3.6	4.0	n.a.	−2.8	5.6	8.7	3.0	−2.8	−3.6	−8.9	−8.0	−10.8	−13.2	n.a.	−11.8	−10.9	−12.0	−12.8	−10.0	−11.8	−8.3	−7.6	−7.6	−5.9	−5.5	−2.0	−6.3	2.1	6.1	14.9	−3.9	−1.2	−0.4	−0.6	−3.3	−5.8
a	1956 - 1973	−1.4	−2.8	−17.1	−4.2	−0.8	−0.4	−0.8	−1.1	−0.6	−1.6	−0.7	−1.6	−1.0	2.2	−0.2	−1.8	11.7	1.8	−0.4	−2.1	−3.4	−4.2	−3.3	−3.1	−3.7	−1.6	−0.1	−4.8	−4.8	−5.7	−0.4	−8.4	71.3	8.4	2.1	3.6	−0.4	0.2	−1.4	0	0.6	1.3	2.6	8.1	2.6	8.2	4.0	5.2	−0.4
r	1973 - 1988	−6.5	−0.9	12.2	−4.1	−5.3	−5.5	−5.4	−4.3	−4.3	−4.2	−3.3	−3.5	−2.1	−2.5	−6.2	n.a.	−0.6	−10.4	−13.9	−15.5	−17.1	−70.1	n.a.	n.a.	−46.7	−46.1	−28.9	−20.1	−15.2	−12.8	−15.3	−15.3	−8.8	−7.7	−6.4	−3.8	−4.0	−7.7	−6.3	−8.7	−10.0	−9.8	−17.9	0.2	3.1	1.0	−0.4	0	3.8
δ	1884 - 1988	−4.6	−4.3	n.a.	[illegible]	−3.2	−3.3	−3.1	−2.8	−2.1	−1.9	−3.9	−3.8	−3.6	0.4	1.1	n.a.	n.a.	n.a.	n.a.	n.a.	−2.8	−71.8	n.a.	n.a.	−72.8	−71.8	−17.8	−12.8	−11.8	−10.4	−9.8	−6.8	6.9	6.2	1.2	1.5	5.5	0.2	−0.1	−0.9	−0.9	−1.7	−2.8	−1.1	−2.5	−2.2	−3.9	−5.1	−6.6

Transect #		99	100	101	102	103	104	105	106	107	108	109	110	111	112
Transect coordinate		15"	89° 32' 00"	45"	30"	15"	89° 31' 00"	45"	30"	15"	89° 30' 00"	45"	30"	15"	89° 29' 00"
Y	1884 - 1932	−18.9	−16.3	−7.1	−8.8	−7.9	−9.5	−3.5	−3.8	−3.3	−3.6	n.a.	−5.2	−4.5	n.a.
ø	1932 - 1956	−19.5	−8.7	−12.6	−13.8	−13.5	−12.6	−11.5	−10.0	−8.8	n.d.	n.d.	n.d.	n.d.	n.d.
a	1956 - 1973	5.6	4.3	1.8	3.8	7.6	0.1	2.6	2.0	1.9	n.d.	n.d.	n.d.	n.d.	n.d.
r	1973 - 1988	−8.4	−8.3	−9.8	−9.9	−11.4	n.a.	−10.7	n.a.	−19.1	n.a.	n.a.	n.a.	−11.0	n.a.
δ	1884 - 1988	−10.2	−8.8	−7.4	−8.8	−7.1	n.a.	−5.4	n.a.	−5.8	n.a.	n.a.	n.a.	−5.1	n.a.

Grand Terre Islands gulfside summary

Years	Sum	Avg	STD	Total	Range	Count
1884 - 1932	−100.4	−4.8	4.1	8.0	−10.1	21
1932 - 1956	−20.8	−1.0	7.3	7.5	−12.2	20
1956 - 1973	−129.7	−7.2	6.1	4.6	−27.3	18
1973 - 1988	−127.5	−7.9	6.5	5.9	−13.6	16
1884 - 1988	−65.7	−3.9	3.5	1.9	−9.2	17

Shell Island gulfside summary

Years	Sum	Avg	STD	Total	Range	Count
1884 - 1932	−50.8	−3.6	5.3	2.6	−14.2	14
1932 - 1956	−89.3	−6.0	6.7	9.7	−13.2	15
1956 - 1973	−41.1	−2.4	4.0	11.1	−8.4	17
1973 - 1988	−338.8	−24.2	17.8	−3.6	−75.1	14
1884 - 1988	−101.5	−10.1	2.8	−2.5	−12.5	10

Plaquemines gulfside summary

Years	Sum	Avg	STD	Total	Range	Count
1884 - 1932	−570.0	−5.5	5.8	7.7	−18.4	104
1932 - 1956	−411.1	−4.1	7.3	21.6	−20.8	101
1956 - 1973	−319.4	−3.2	6.8	11.3	−33.0	101
1973 - 1988	−900.3	−9.6	11.1	14.9	−75.1	94
1884 - 1988	−494.3	−5.5	4.5	1.9	−15.6	90

See page 46 for explanation of numbers.

Plaquemines

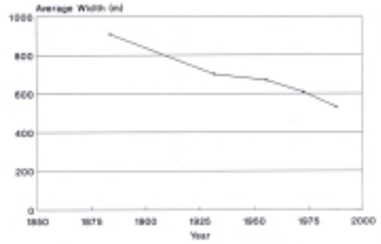


FIGURE 43.—Average barrier width of the Grand Terre Islands between 1884 and 1988.

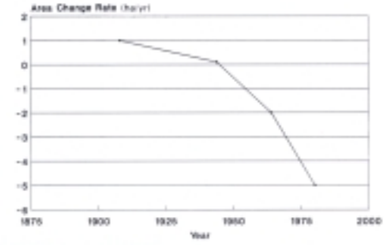


FIGURE 44.—Rate of area change of Shell Island between 1884 and 1988.

FIGURE 45.—Area changes of Shell Island between 1884 and 1988.

FIGURE 46.—Average barrier width of Shell Island between 1884 and 1988.

TABLE 29.—*Area changes for Grand Terre Island from 1884 to 1988*

Date	Area (ha)	Change (ha)	% Change	Rate (ha/yr)	Projected Date of Disappearance
1884	1,689				
1932	1,048	-641	-38%	-13.4	2011
1932	1,048				
1956	901	-157	-15%	-6.5	2086
1956	901				
1973	675	-226	-25%	-13.3	2024
1973	675				
1988	513	-162	-24%	-10.8	2036
1884	1,699				
1988	513	-1,186	-70%	-11.4	2033

TABLE 30.—*Area Changes for the Shell Island from 1884 to 1988*

Date	Area (ha)	Change (ha)	% Change	Rate (ha/yr)	Projected Date of Disappearance
1884	127				
1932	175	48	38%	1.0	N.A.
1932	175				
1956	178	3	0%	0.1	N.A.
1956	178				
1973	144	-34	-19%	-2.0	2045
1973	114				
1988	69	-75	-52%	-5.0	2002
1884	127				
1988	69	-58	-46%	-0.6	2103